इंटरनेट मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”
Mazdoor Kisan Shakti Sangathan
“The Right to Information, The Right to Live”

“पुराने को छोड नये के तरफ”
Jawaharlal Nehru
“Step Out From the Old to the New”

IS 1835 (1976): Round Steel Wire for Ropes [MTD 4: Wrought Steel Products]

“ज्ञान से एक नये भारत का निर्माण”
Satyanarayan Gangaram Pitroda
“Invent a New India Using Knowledge”

Act Number 22 of 2005
The Indian Parliament
RIGHT TO INFORMATION

Made Available By
Public.Resource.Org

“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”
Bhartṛhari—Nītiśatakam
“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE

BRUTUM FULMEN

IGNORANTIA JURIS NON EXCUSAT

PROTECTED BY COPYRIGHT

IS : 1835 - 1976
(Reaffirmed 1997)

Indian Standard

SPECIFICATION FOR ROUND STEEL WIRE FOR ROPES

(Third Revision)

Second Reprint NOVEMBER 2000

UDC 669.14-426.2 : 677.72

© *Copyright* 1976

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 4 *October* 1976

AMENDMENT NO. 1 JUNE 1980

TO

IS:1835-1976 SPECIFICATION FOR ROUND STEEL WIRE FOR ROPES

(Third Revision)

Alterations

(*Page 3, clause 1.1, line 1*) - Delete the words 'five grades of'.

(*Page 4, Table 1*):

a) *Col 2, third entry* - Substitute '0.10 to 0.35' *for* '0.10 to 0.30'.

b) *Col 7* - Delete.

[*Page 12, clause A-1*(c)] - Delete the words 'or chemical composition'.

Addendum

(*Page 3, clause 1.1*) - Add the following new clause after 1.1:

'1.2 The chemical composition shall be suitably selected from Table 1 so as to meet with the various tensile designation of wires given in Table 2.'

(SMDC 5)

Printed at New India Printing Press Khurja India

AMENDMENT NO. 2 OCTOBER 1997
TO
IS 1835 : 1976 SPECIFICATION FOR ROUND STEEL WIRE FOR ROPES

(Third Revision)

(*Page* 4, *Table* 1):

a) *Column* 6, *seventh entry* —Substitute '0.10' *for* '0.15'.

b) *Column* 6, *eighth entry* — Substitute '0.10' *for* '0.15'.

(*Page* 8, *clause* **12.1**, *line* 2) — Substitute 'one end' *for* 'each end'.

(*Page* 8, *clause* **12.3.3**) — Insert the following new clause after **12.3.3**:

'**12.3.4** For all the samples tested for torsion test, the torsion values shall be above the minimum acceptance limit.'

(MTD 4)

Printed at New India Printing Press, Khurja, India

AMENDMENT NO. 2 OCTOBER 1997
TO
IS 1835 : 1976 SPECIFICATION FOR ROUND STEEL WIRE FOR ROPES

(*Third Revision*)

(*Page* 4, *Table* 1):

a) *Column* 6, *seventh entry* —Substitute '0.10' *for* '0.15'.

b) *Column* 6, *eighth entry* — Substitute '0.10' *for* '0.15'.

(*Page* 8, *clause* **12.1**, *line* 2) — Substitute 'one end' *for* 'each end'.

(*Page* 8, *clause* **12.3.3**) — Insert the following new clause after **12.3.3**:

'**12.3.4** For all the samples tested for torsion test, the torsion values shall be above the minimum acceptance limit.'

(MTD 4)

Reprography Unit, BIS, New Delhi, India

Indian Standard
SPECIFICATION FOR ROUND STEEL WIRE FOR ROPES
(Third Revision)

Wrought Steel Products Sectional Committee, SMDC 5

Chairman	*Representing*
N. BHRANY	Modella Steel and Alloys Ltd, Bombay
Members	
BRAHAM	Association of Indian Engineering Industry, Calcutta
SHRI ANJANEYULU	Mining & Allied Machinery Corporation Ltd, Durgapur
SHRI D. P. SANYAL (*Alternate*)	
SHRI H. S. ASWATH	Bokaro Steel Ltd, Bokaro Steel City
SHRI S. G. TUDEKAR (*Alternate*)	
SHRI N. C. BAGCHI	National Test House, Calcutta
SHRI A. K. BANERJEE	Metallurgical and Engineering Consultants (India) Ltd, Ranchi
SHRI B. N. SINGH (*Alternate*)	
SHRI S. BANERJEE	Steel Rerolling Mills Association of India, Calcutta
SHRI S. [illegible]. BASU	Guest, Keen, Williams, Ltd, Howrah
SHRI A. ROY CHOWDHURY (*Alternate*)	
SHRI F. K. CHAKRAVARTY	The Tata Iron & Steel Co Ltd, Jamshedpur
SHRI M. C. KUMARASWAMY (*Alternate*)	
SHRI G. CHATTERJEE	Hindustan Steel Ltd, Durgapur
SHRI K. Z. MATHEN (*Alternate*)	
SHRI [illegible] CHATTERJEE	Ministry of Defence (DGI)
SHRI V. RAMASWAMY (*Alternate*)	
SHRI R. CHOUBEY	National Metallurgical Laboratory (CSIR), Jamshedpur
SHRI R. SINGH (*Alternate*)	
DR N [illegible] DATAR	Hindustan Steel Ltd, Rourkela
S [illegible] . S. SINGH (*Alternate*)	
MAJ [illegible] M. G. DEWAN	Tinplate Company of India Ltd, Golmuri
[illegible] BALASHANKAR (*Alternate*)	

(*Continued on page* 2)

© *Copyright* 1976
BUREAU OF INDIAN STANDARDS
lication is protected under the *Indian Copyright Act* (XIV of 1957) and
on in whole or in part by any means except with written permission of the
hall be deemed to be an infringement of copyright under the said Act.

(*Continued from page* 1)

Members	*Representing*
Director (M&C), RDSO	Ministry of Railways
Chemist & Metallurgist, Chittaranjan Locomotive Works (*Alternate*)	
Shri A. K. Guha	Inspection Wing, Directorate General of Supplies & Disposals, New Delhi
Shri P. C. Mustafi (*Alternate*)	
Joint Director Standards (Wagon)	Ministry of Railways
Additional Director R.S. (Iron & Steel) (*Alternate*)	
Dr V. C. Kashyap	Special Steels Ltd, Bombay
Shri S. S. Muranjan (*Alternate*)	
Shri M. N. Khanna	Hindustan Steel Ltd, Bhilai
Shri K. C. Som (*Alternate*)	
Dr D. M. Lakhiani	Indian Iron and Steel Co Ltd, Burnpur
Shri T. K. Datta (*Alternate*)	
Shri P. Laxminarayana	Hindustan Shipyard Ltd, Visakhapatnam
Shri R. C. Mahajan	Indian Steel & Wire Products Ltd, Indranagar, Jamshedpur
Shri Avtar Singh (*Alternate*)	
Shri M. K. Pramanik	Iron and Steel Control, Calcutta
Shri R. A. Rama Rao	Hindustan Steel Works Construction Ltd, Calcutta
Shri R. H. G. Rau	Mukand Iron & Steel Works Ltd, Bombay
Shri S. A. Nigam (*Alternate*)	
Shri D. V. Reddi	Indian Institute of Metals, Calcutta
Shri D. Sen	Ministry of Defence (DGOF)
Shri Y. C. Subramanya (*Alternate*)	
Shri R. K. Sethi	Industrial Fasteners Association of India, Calcutta
Dr S. J. Shah	Spinning Machinery (Cotton System) Sectional Committee, TDC 30, ISI
Shri L. Sikand	Metals Box Co of India Ltd, Calcutta
Shri K. R. Narasimhan (*Alternate*)	
Shri D. Srinivasan	Joint Plant Committee, Calcutta
Shri B. P. Ghosh (*Alternate*)	
Technical Adviser (Boilers)	Central Boilers Board, Ministry of Industrial Development, New Delhi
Shri K. S. Vaidyanathan	M. N. Dastur & Co (Pvt) Ltd, Calcutta
Shri G. Venkateswarlu	Ministry of Defence (R&D)
Shri E. S. Bhagiratha Rao (*Alternate*)	
Shri C. R. Rama Rao, Director (Struc & Met)	Director General, ISI (*Ex-officio Member*)

Secretary

Shri Shanti Swarup

Assistant Director (Metals), ISI

(*Continued on page* 13)

Indian Standard
SPECIFICATION FOR ROUND STEEL WIRE FOR ROPES
(Third Revision)

0. FOREWORD

0.1 This Indian Standard (Third Revision) was adopted by the Indian Standards Institution on 21 May 1976, after the draft finalized by the Wrought Steel Products Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 This standard was first issued in 1961 and was twice revised in 1966 and 1972. In this third revision the important modifications pertain to the inclusion of steel wires up to nominal diameter of 5·0 mm, chemical composition of steel wire and the adhesion test.

0.3 In this standard, an informative appendix (*see* Appendix A) has been included for the benefit of the purchaser, giving particulars to be specified while ordering for steel wires conforming to this standard.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements for five grades of round steel wires of nominal diameters 0·20 to 5·0 mm for use in the manufacture of wire ropes.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions and the definitions given in IS : 1956 (Part V)-1976† shall apply.

2.1 Bundle — Two or more coils or a number of lengths of wire securely bound together.

---

*Rules for rounding off numerical values (*revised*).

†Glossary of terms relating to iron and steel, Part V Bright steel bar and steel iron.

2.2 Coil — One continuous length of wire as drawn in the form of coil.

2.3 Piece — A length of wire without joint or splice of any description in the finished wire.

3. TYPES

3.1 The steel wire shall be of the following types:

- a) Bright wire (ungalvanized wire), and
- b) Galvanized wire:
  - i) Type B,
  - ii) Type AB, and
  - iii) Type A.

4. SUPPLY OF MATERIAL

4.1 General requirements relating to the supply of steel wire for ropes shall conform to IS : 1387-1967*.

5. CHEMICAL COMPOSITION

5.1 The chemical analysis of various grades of wire when made in accordance with the relevant parts of IS : 228† shall be as given in Table 1.

TABLE 1 CHEMICAL COMPOSITION OF STEEL WIRE FOR ROPES

Constituent, Percent	Range	Grades				
		1	2	3	4	5
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Carbon	0·35 to 1·00	5 *	5 *	5 *	5 *	5 *
Manganese	0·30 to 0·90	20 *	20 *	20 *	30 *	30 *
Silicon	0·10 to 0·30	15 *	15 *	15 *	20 *	25 *
Sulphur, *Max*	—	0·020	0·025	0·04	0·05†	0·05
Phosphorus, *Max*	—	0·025	0·025	0·04	0·05†	0·05
Copper, *Max*	—	0·06	0·10	0·10	0·15	0·20
Nickel, *Max*	—	0·05	0·10	0·10	0·15	0·20
Chromium, *Max*	—	0·05	0·10	0·10	0·15	0·20

*Acceptable within point range.

†$P + S = 0{\cdot}08$, *Max*.

---

*General requirements for the supply of metallurgical materials (*first revision*).

†Methods of chemical analysis of steels (*second revision*). (Being issued in parts).

6. MANUFACTURE

6.1 The wire shall be cold drawn from steel made by the open hearth, electric, duplex, basic-oxygen or a combination of these processes. In case any other process is employed by the manufacturer, prior approval of the purchaser should be obtained.

6.2 If so required, the manufacturer shall furnish the steel maker's cast analysis to the purchaser and issue a certificate to him that the wire has been drawn from the certified steel.

7. FREEDOM FROM DEFECTS

7.1 All finished wires shall be well and cleanly drawn to the dimensions specified. The wire shall be sound, free from splits, surface flaws; rough, jagged and imperfect edges; and other harmful surface defects.

8. TENSILE DESIGNATION

8.1 The wire may be ordered in any one of the designations specified in Table 2.

TABLE 2 TENSILE STRENGTH RANGES FOR DIFFERENT WIRE SIZES

(*Clauses* 8.1 *and* 12.2.3)

Tensile Designation	Nominal Wire Diameter, mm				
	2 and Over	Below 2 Up to 1·5	Below 1·5 Up to 1	Below 1 Up to 0·5	Below 0·5
	Tensile Strength Range N/mm²* (kgf/mm²)				
(1)	(2)	(3)	(4)	(5)	(6)
1230 (125)	1 230-1 490 (125-152)	1 230-1 520 (125-155)	1 230-1 550 (125-158)	1 230-1 580 (125-161)	1 230-1 620 (125-165)
1420 (145)	1 420-1 690 (145-172)	1 420-1 710 (145-175)	1 420-1 740 (145-178)	1 420-1 780 (145-181)	1 420-1 810 (145-185)
1570 (160)	1 570-1 790 (160-187)	1 570-1 860 (160-190)	1 570-1 890 (160-193)	1 570-1 920 (160-196)	1 570-1 960 (160-200)
1770 (180)	1 770-2 020 (180-207)	1 770-2 060 (180-210)	1 770-2 090 (180-213)	1 770-2 110 (180-216)	1 770-2 160 (180-220)
1960 (200)	1 960-2 220 (200-226)	1 960-2 260 (200-230)	1 960-2 280 (200-232)	1 960-2 300 (200-235)	1 960-2 340 (200-239)

*1 N/mm² = 1 MN/m² = 0·1020 kgf/mm².

9. GALVANIZING

9.1 The galvanized coating of steel wire shall conform to the requirements given in Table 3.

TABLE 3 MASS OF ZINC DEPOSITED AND NUMBER OF IMMERSIONS PER MINUTE

(*Clauses* 9.1 *and* 11.3)

Diameter of Wires*, mm		Bright and Galvanized Wire Type B†, Tensile Designations 1230, 1420, 1570, 1770 and 1960			Galvanized Wire Type AB†, Tensile Designations 1420, 1570 and 1770			Galvanized Wire Type A†, Tensile Designations 1230, 1420, 1570 and 1770		
From (Incl)	To (Excl)	Minimum Mass of Zinc, g/m²	Number of Immersions		Minimum Mass of Zinc, g/m²	Number of Immersions		Minimum Mass of Zinc, g/m²	No. of Immersions	
			1 Minute duration	*½ Minute duration*		*1 Minute duration*	*½ Minute duration*		*1 Minute duration*	*½ Minute duration*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
0·20	0·25	20	No test		—	—	—	—	—	—
0·25	0·40	30	No test		—	—	—	—	—	—
0·40	0·50	40	No test		60	No test		75	—	1
0·50	0·60	50	No test		70	No test		90	—	1
0·60	0·80	60	—	1	85	—	1	110	1	–
0·80	1·00	70	—	1	95	—	1	130	1	—
1·00	1·20	80	1	—	110	1	—	150	1	1
1·20	1·50	90	1	—	120	1	—	165	1	1
1·50	1·90	100	1	—	130	1	1	180	2	—
1·90	2·50	110	1	1	—	—	—	205	2	—
2·50	3·20	125	1	1	—	—	—	230	2	1
3·20	3·70	135	2	—	—	—	—	250	3	—
3·70	4·25	135	2	—	—	—	—	260	3	—
4·25	5·00	150	2	—	—	—	—	275	3	1

*Before removing the zinc coating.

†The galvanizing process is not prescribed.

10. TOLERANCES ON DIAMETER

10.1 Wires shall conform to the tolerances given in Table 4.

TABLE 4 DIMENSIONAL LIMITS AND TOLERANCES

(All dimensions in millimetres)

Diameter of Wire		Tolerances		
From (Incl)	To (Excl)	Bright and Galvanized Wire Type B	Galvanized Wire Type AB	Galvanized Wire Type A
(1)	(2)	(3)	(4)	(5)
0·20	0·40	± 0·010	—	—
0·40	1·00	± 0·015	± 0·015	± 0·030
1·00	1·60	± 0·020	± 0·020	+ 0·040 − 0·030
1·60	2·00	± 0·025	± 0·025	+ 0·040 − 0·030
2·00	2·40	± 0·025	—	+ 0·050 − 0·030
2·40	3·70	± 0·030	—	+ 0·060 − 0·030
3·70	4·25	± 0·030	—	+ 0·060 − 0·030
4·25	5·00	+ 0·050 − 0·030	—	+ 0·080 − 0·030

11. TESTS FOR COATING

11.1 The coating of galvanized wire shall be tested on each end of one for every 5 coils or part thereof or such other portions as may be agreed to between the purchaser and the manufacturer.

11.2 Uniformity of Zinc Coating — This shall be determined in accordance with the method laid down in IS: 2633-1972*.

11.3 Mass of Zinc Coating — When determined in accordance with IS: 6745-1972†, the mass of zinc coating shall not be less than that specified in Table 3.

---

*Methods for testing uniformity of coating on zinc coated articles (*first revision*).

†Method for determination of weight of zinc coating on zinc coated iron and steel articles.

12. MECHANICAL TEST

12.1 Selection of Test Samples — Test sample of sufficient length for mechanical tests shall be cut from each end of each coil.

12.2 Tensile Test — Tensile test shall be carried out in accordance with IS : 1521-1972*.

12.2.1 The test sample shall be clamped in the testing machines with the jaws set at a distance not less than the following:

a) For diameter up to and including 2·00 mm	100 times the nominal diameter
b) For diameter exceeding 2·00 mm	200 mm

12.2.2 The tensile strength of wire shall be calculated on the actual diameter.

12.2.3 The tensile strength of any wire shall not fall outside the limits of the range given in Table 2 for the appropriate tensile designation and nominal wire diameter.

12.3 Torsion Test — Torsion test shall be carried out in accordance with IS : 1717-1971†.

12.3.1 The torsion test of the wire shall be applicable to wire having a diameter of 0·5 mm and over.

12.3.2 The length of the test piece between the vices shall be 100 times the diameter of the wire. When this length is not possible, the number of torsions (*see* Table 5) which the wire shall withstand shall be equal to the number of torsions specified for 100 diameters multiplied by the ratio of the length tested to 100 times the diameter.

12.3.3 Depending on its diameter and tensile strength, the wire shall be capable of withstanding, before fracture, the minimum number of turns given in Table 5.

12.4 Reverse Bend Test — If required by the rope specification and so specified by the purchaser, the reverse bend test shall be conducted in accordance with IS : 1716-1971‡.

12.4.1 This test shall be applicable to wire having a diameter 0·5 mm and over.

12.4.2 The test sample shall withstand without failure the minimum number of bends as specified in Table 6, appropriate to the nominal wire diameter and the tensile designation.

---

*Method for tensile testing of steel wire (*first revision*).

†Method for simple torsion testing of steel wire (*first revision*).

‡Method for reverse bend testing of steel wire (*first revision*).

TABLE 5 MINIMUM NUMBER OF TORSIONS IN 100 X WIRE DIAMETER

(*Clauses* 12.3.2 *and* 12.3.3)

Diameter of Wire mm		Bright and Galvanized Wire Type B, Tensile Designations				Galvanized Wire Type AB, Tensile Designations			Galvanized Wire Type A, Tensile Designations		
From (Incl)	To (Excl)	1230 and 1420	1570	1770	1960	1420	1570	1770	1230 and 1420	1570	1770
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
0·20	0·50	No test	No test	No test	No test	—	—	—	—	—	—
0·50	1·00	34	30	28	22	30	28	26	20	19	15
1·00	1·30	33	29	26	20	29	26	23	19	18	13
1·30	1·80	33	28	25	19	28	25	22	18	17	11
1·80	2·00	33	26	24	18	26	24	21	18	17	11
2·00	2·30	32	26	24	17	—	—	—	18	17	11
2·30	3·00	31	24	22	16	—	—	—	16	14	—
3·00	3·70	30	22	20	—	—	—	—	14	12	—
3·70	4·25	27	20	18	—	—	—	—	No test	—	—
4·25	5·00	25	18	—	—	—	—	—	No test	—	—

Note 1 — The sample after test shall be visually examined and it shall not split.

Note 2 — A dash (—) indicates wires are not produced.

TABLE 6 REQUIREMENTS FOR REVERSE BEND TEST

(*Clause* 12.4.2)

Diameter of Wire	Radius of Curvature of the Supports	Bright and Galvanized Wire Type B, Tensile Designations				Galvanized Wire Type AB. Tensile Designations			Galvanized Wire Type A, Tensile Designations		
mm	mm	1230 and 1420	1570	1770	1960	1420	1570	1770	1230 and 1420	1570	1770
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
0·50	1·25	9	7	6	6	7	6	5	6	5	5
0·55	1·75	15	13	12	12	13	12	11	11	10	8
0·60		13	11	10	10	11	10	9	9	8	7
0·65		11	9	8	8	9	8	7	8	7	5
0·70		10	8	7	7	8	7	6	7	6	5
0·75	2·50	15	15	14	11	15	14	13	13	12	9
0·80		14	14	13	10	14	13	12	12	11	7
0·85		13	13	12	9	13	12	11	11	10	5
0·90		12	12	11	8	12	11	10	10	9	5
0·95		10	11	10	7	11	10	9	9	8	4
1·00		10	10	9	7	10	9	8	9	8	4

(*Continued*)

TABLE 6 REQUIREMENTS FOR REVERSE BEND TEST — *Contd*

DIAMETER OF WIRE	RADIUS OF CURVATURE OF THE SUPPORTS	BRIGHT AND GALVANIZED WIRE TYPE B, TENSILE DESIGNATIONS				GALVANIZED WIRE TYPE AB, TENSILE DESIGNATIONS			GALVANIZED WIRE TYPE A, TENSILE DESIGNATIONS		
mm	mm	1230 and 1420	1570	1770	1960	1420	1570	1770	1230 and 1420	1570	1770
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1·10	3·75	18	17	16	14	17	16	15	15	14	10
1·20		15	15	14	11	15	14	13	13	12	7
1·30		13	13	12	9	13	12	11	11	10	6
1·40		11	11	10	8	11	10	9	9	8	5
1·50		10	10	9	7	10	9	8	8	7	4
1·60	5	14	13	12	11	13	12	11	11	10	7
1·70		12	12	11	9	12	11	10	10	9	6
1·80		11	11	10	8	11	10	9	9	8	5
1·90		10	10	9	7	10	9	8	8	7	5
2·00		10	9	8	7	—	—	—	7	7	5
2·10	7·5	16	13	12	12	—	—	—	11	10	9
2·20		16	12	11	11	—	—	—	10	9	8
2·30		14	11	10	10	—	—	—	9	8	7
2·40		13	10	9	9	—	—	—	8	7	7
2·50		12	9	8	9	—	—	—	7	7	6
2·60		11	9	8	8	—	—	—	6	6	6
2·70		10	8	7	6	—	—	—	6	6	6
2·80		10	8	7	6	—	—	—	5	5	5
2·90		9	7	6	5	—	—	—	5	4	4
3·00		8	6	5	5	—	—	—	4	3	3
3·10	10	12	9	8	8	—	—	—	8	6	6
3·20		12	8	7	7	—	—	—	7	6	6
3·30		11	8	7	—	—	—	—	7	5	5
3·40		10	7	6	—	—	—	—	6	5	5
3·50		10	7	6	—	—	—	—	6	5	4
3·60		9	7	6	—	—	—	—	6	5	4
3·70		9	7	6	—	—	—	—	6	5	3
3·80		8	7	6	—	—	—	—	5	5	3
3·90		8	7	6	—	—	—	—	5	4	3
4·00		8	7	6	—	—	—	—	5	4	3
4·10	15	11	10	9	—	—	—	—	8	7	—
4·20		10	9	8	—	—	—	—	7	6	—
4·40		9	8	7	—	—	—	—	6	5	—
1·60		8	7	6	—	—	—	—	5	4	—
4·80		7	6	5	—	—	—	—	4	3	—
5·00		7	6	5	—	—	—	—	4	3	—

NOTE — If the diameter of the wire is between two consecutive diameters as given above, the number of bends corresponding to the next larger diameter should be taken.

12.5 Wrapping Test (Bright Wires Only) — When so specified by the purchaser, each end of each coil shall be subjected to a wrapping test in which case the wire shall be wrapped for eight complete close turns around a mandrel equal to its own diameter and shall not fracture when unwrapped seven turns.

12.5.1 The wrapping test shall be conducted in accordance with IS : 1755-1961*.

12.6 Adhesion Test — Adhesion test for galvanized wire shall be carried out by wrapping the wire eight times around a mandrel of diameter 4 times the wire diameter for wire diameters up to and including 3·5 mm and 5 times the wire diameter for wire diameters above 3·5 mm. The zinc coating shall not crack or flake off to such an extent that the same may be removed by rubbing with bare fingers.

13. RETEST

13.1 Should any one of the test pieces first selected fail to pass any of the tests specified in this standard, two further samples shall be taken from the same end of the same coil for testing in respect of each failure. Should the test pieces from both these additional samples pass, the coil from which they are taken shall be deemed to comply with this standard. Should any of the additional test pieces fail, the coil shall not be considered as having complied with this standard.

14. MARKING

14.1 Each coil of wire shall carry a suitable lable with the type and size of wire, tensile designation number, manufacturer's name or trade-mark, and such other markings as may be agreed to between the purchaser and the supplier.

14.1.1 The product may also be marked with Standard mark.

14.1.1.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

---

*Method for wrapping test of wire.

APPENDIX A

(*Clause* 0.3)

BASIS FOR ORDER

A-1. The following particulars may be specified by the purchaser while placing order for steel wire for ropes:

a) The number of this Indian Standard;

b) The nominal diameter of the wire. In case of galvanized wire, the nominal diameter includes the galvanized coating;

c) Tensile designations or chemical composition;

d) Type of finish;

e) Special requirements, such as bundling, marking, etc; and

f) Tests report, if required.

(*Continued from page* 2)

Panel for Steel Wires for Ropes, SMDC 5 : P 25

Convener	*Representing*
SHRI K. BHATTACHARYA	Directorate General of Mines Safety, Dhanbad
Members	
SHRI P. BANERJEE	The National Rolling and Steel Ropes Ltd, Calcutta
SHRI P. K. DUTTA (*Alternate*)	
SHRI D. S. BHULLAR	General Engineering Works, Bharatpur
SHRI A. C. GUPTA (*Alternate*)	
SHRI N. K. CHAKRAVARTY	United Wire Ropes Ltd, Thana
SHRI K. K. CHATTERJEE	South India Wire Ropes Ltd, Edathala, Alwaye
SHRI K. K. VELAYUDHAN (*Alternate*)	
SHRI R. K. KEJRIWAL	Usha Martin Black (Wire Ropes) Ltd, Ranchi
REPRESENTATIVE	Bhilai Steel Plant, Bhilai
REPRESENTATIVE	Special Steels Ltd, Bombay

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002
Telephones: 323 0131, 323 3375, 323 9402
Fax : 91 11 3234062, 91 11 3239399, 91 11 3239382

Telegrams : Manaksanstha
(Common to all Offices)

Central Laboratory:

	Telephone
Plot No. 20/9, Site IV, Sahibabad Industrial Area, SAHIBABAD 201010	8-77 00 32

Regional Offices:

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002	323 76 17
*Eastern : 1/14 CIT Scheme VII M, V.I.P. Road, Maniktola, CALCUTTA 700054	337 86 62
Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160022	60 38 43
Southern : C.I.T. Campus, IV Cross Road, CHENNAI 600113	235 23 15
†Western : Manakalaya, E9 Behind Marol Telephone Exchange, Andheri (East), MUMBAI 400093	832 92 95

Branch Offices:

'Pushpak', Nurmohamed Shaikh Marg, Khanpur, AHMEDABAD 380001	550 13 48
‡Peenya Industrial Area, 1st Stage, Bangalore - Tumkur Road, BANGALORE 560058	839 49 55
Gangotri Complex, 5th Floor, Bhadbhada Road, T. T. Nagar, BHOPAL 462003	55 40 21
Plot No. 62-63, Unit VI, Ganga Nagar, BHUBANESHWAR 751001	40 36 27
Kalaikathir Buildings, 670 Avinashi Road, COIMBATORE 641037	21 01 41
Plot No. 43, Sector 16 A, Mathura Road, FARIDABAD 121001	8-28 88 01
Savitri Complex, 116 G. T. Road, GHAZIABAD 201001	8-71 19 96
53/5 Ward No. 29, R. G. Barua Road, 5th By-lane, GUWAHATI 781003	54 11 37
5-8-58C, L. N. Gupta Marg, Nampally Station Road, HYDERABAD 500001	20 10 83
E-52, Chitaranjan Marg, C-Scheme, JAIPUR 302001	37 29 25
117/418 B, Sarvodaya Nagar, KANPUR 208005	21 68 76
Seth Bhawan, 2nd Floor, Behind Leela Cinema, Naval Kishore Road, LUCKNOW 226001	23 89 23
Patliputra Industrial Estate, PATNA 800013	26 23 05
T. C. No. 14/1421, University P. O. Palayam, THIRUVANANTHAPURAM 695034	6 21 17
NIT Building, Second Floor, Gokulpat Market, NAGPUR 440010	52 51 71
Institution of Engineers (India) Building, 1332 Shivaji Nagar, PUNE 411005	32 36 35

---

*Sales Office is at 5 Chowringhee Approach, P. O. Princep Street, CALCUTTA 700072	27 10 85
†Sales Office is at Novelty Chambers, Grant Road, MUMBAI 400007	309 65 28
‡Sales Office is at 'F' Block, Unity Building, Narashimaraja Square, BANGALORE 560002	222 39 71

Printed at New India Printing Press, Khurja, India